



4th World Congress on Agroforestry

20-22 May 2019
Montpellier, France

Book of Abstracts



Potential for managing natural regeneration by family farmers in the Amazon: making the most of biodiversity

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Natural regeneration represents more than half of all tropical forests. Within the Brazilian Amazon, the area of regenerating forest increased by 70% between 2004 and 2014, currently occupying more than 17 million hectares. These ecosystems have an important social roles, such as increasing food security and alleviating poverty among thousands of family farmers in the Amazon, while also being important repositories of biodiversity and carbon. Brazil has made bold commitments to the restoration of 12 million ha of forest by 2030 through the Bonn Challenge, Initiative 20 × 20, and its Forest Code law. The management of natural regeneration can be a viable alternative for accomplishing these commitments with less socioeconomic costs and higher environmental benefits. Here, we present a collation of different studies from the authors addressing natural regeneration on family farmers' land in the Eastern Amazon, aiming to address three overarching questions: i) How diverse are tree communities on these lands following natural regeneration? ii) What proportion of trees in regenerating forests have potential use recorded in the literature? iii) What are the real uses and motivations for farmers to maintain and manage these areas. We performed field surveys in 10m x 250m transects placed in regenerating forest fragments, followed by a literature review on potential uses for the dominant trees (> 80% of basal area). We separated the different uses in categories encompassing timber and non-timber forest products-NTPF (e.g. medicine, ornamental, food, handcraft, firewood). We applied semi-structured interviews and use the likert-scale to understand the uses and motivations for managing natural regeneration. The high tree diversity in the studied regenerating forests (up to 120 species ha⁻¹) is reflected by a high variety of potential uses reported in the literature. Using an old regenerating forest plot (~50 years) as a case study in Northeast Pará, we found the vast majority of species reported in the literature as having potential for timber (76%), followed by firewood/charcoal (34%), medicine (29%) and food (20%). Natural regeneration has been used by family farmers in the Northeast of Pará for multiple uses, but mainly for extracting timber (50%) and hunting (18%). In fact, NTPF-extraction and beekeeping management are important motivations for family farmers to conserve naturally regenerating areas. Despite the high potential for Farmer-Managed Natural Regeneration, the reality is that these areas continue to be prioritized for slash-and-burn agriculture. Therefore, public policies are needed to encourage family farmers to protect areas under natural regeneration to capitalize on the potential this form of restoration offers in the Amazon.

Keywords: ecological restoration, secondary forests, tree diversity, ecosystem services, Brazilian Amazon.